In The Abstract

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ABSTRACT A multi-resolution color contact-type image sensing apparatus whereby a color image of an original can be obtained with a particular resolution, depending upon the size of the original image. A first array of photosensor segments with a base resolution is arranged with at least one other array of photosensor segments having a greater-than-base resolution. All such photosensor segments might be aligned in a single linear array, with at least one portion of segments having a greater-than-base resolution. A resulting image with at least the base resolution could be created depending upon the size of the original in relation to the placement and width of the greater-than-base resolution segments. A plurality of linear arrays might also be used, with each successive array having a greater resolution than the previous array. Moreover, the arrays might be arranged in parallel with each successive array being narrower in width than the previous. Each linear array could be operated independently or in conjunction with the other linear arrays to produce multi-resolution resulting images. The resolution could be manually or automatically selected.

A3

In The Claims

Claim 21. A multiple resolution sensing apparatus as in claim 3, further comprising;

a plurality of first photosensor segments coupled together to form a first portion of the linear array and having a first length; and

a plurality of second photosensor segments coupled together to form a second portion of the linear array and having a second length,

A4

such that the sum of the first length and the second length corresponds to a first maximum image size when sensed with the first resolution, and such that the second length corresponds to a second maximum image size when sensed with the second resolution.

Claim 22. A multiple resolution sensing apparatus as in claim 21, further comprising:

a plurality of third photosensor segments coupled together to form a third portion of the linear array and having a third length, wherein density of photosensitive elements within the third photosensor segment is greater than density of photosensitive elements in the second photosensor segments such that when scanning at a third resolution the third photosensor segments are used,

such that the sum of the first length, the second length, and the third length corresponds to a first maximum image size when sensed with the first resolution,

such that the second length plus the third length corresponds to a second maximum image size when sensed with the second resolution,

such that the third length corresponds to a third maximum image size when sensed with the third resolution, and

wherein when scanning at the first resolution the first photosensor segment and the second photosensor segment and the third photosensor segment are used, when scanning at the second resolution the second photosensor segment and the third photosensor segment are used, when scanning at the third resolution the third photosensor segment is used.

Claim 23. A multiple resolution sensing apparatus as in claim 22, wherein the first resolution, the second resolution, and the third resolution are manually selectable.

Claim 24. A multiple resolution sensing apparatus as in claim 22, wherein the first resolution, the second resolution, and the third resolution are automatically selected based upon an original image.

Claim 25. A multiple resolution sensing apparatus as in claim 22, wherein density of photosensitive elements within the second photosensor segment is greater than density of photosensitive elements in the first photosensor segment by a factor of four so that the second resolution is twice the first resolution.

Claim 26. A multiple resolution sensing apparatus as in claim 25, wherein density of photosensitive elements within the third photosensor segment is greater than density of photosensitive elements in the second photosensor segment by a factor of four so that the third resolution is twice the second resolution and four times the first resolution.

Claim 27. A multiple resolution sensing apparatus as in claim 4, wherein the peripheral regions are a first peripheral region and a second peripheral region such that the central region is disposed between the first peripheral region and the second peripheral region, and such that the first photosensor segment is in the first peripheral region, and further comprising a third photosensor segment in the second peripheral region.

A4

Claim 28. A multiple resolution sensing apparatus as in claim 27, wherein density of the third photosensor segment equals density of the first photosensor segment.

Claim 29. A multiple resolution sensing apparatus as in claim 27, wherein density of the third photosensor segment is greater than density of the second photosensor segment.

Claim 30. A multiple resolution sensing apparatus as in claim 27, further comprising a middle section disposed within the central section, the middle section having a fourth photosensor segment wherein density of the fourth photosensor segment is greater than density of the second photosensor segment.

Claim 31. A multiple resolution sensing apparatus as in claim 5, wherein the compensation means substantially equalizes the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments by summing and doubling the signals from the smaller sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the larger sized photosensitive elements.

Claim 32. A multiple resolution sensing apparatus as in claim 5, wherein the compensation means substantially equalizes the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments by additional amplification of the signals from the smaller sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the larger sized photosensitive elements.

Claim 33. A multiple resolution sensing apparatus as in claim 5, wherein the compensation means substantially equalizes the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments by increasing the light integration time of the signals from the smaller sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the larger sized photosensitive elements.

A4

Claim 34. A multiple resolution sensing apparatus as in claim 5, wherein the compensation means substantially equalizes the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments by increasing the illumination level which generate the signals from the larger sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the smaller sized photosensitive elements.

Claim 35. A method as in claim 15, wherein a duplicate segment of the first photosensor segment is disposed such that the duplicate segment and the first photosensor segment are in the peripheral regions.

Claim 36. A method as in claim 35, wherein a third photosensor segment is disposed within the central region such that the third photosensor segment enables the following substep:

(a.3) scanning a third portion of the original image using the third photosensor segment, wherein density of photosensitive elements within the third photosensor segment is greater than density of photosensitive elements within the second photosensor segment, such that the third portion of the original image is scanned with a third resolution.

Claim 37. A method as in claim 16, wherein the step of substantially equalizing the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments is implemented by summing and doubling the signals from the smaller sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the larger sized photosensitive elements.

Claim 38. A method as in claim 16, wherein the step of substantially equalizing the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments is implemented by additional amplification of the signals from the smaller sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the larger sized photosensitive elements.

A40

Claim 39. A method as in claim 16, wherein the step of substantially equalizing the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments is implemented by increasing the light integration time of the signals from the smaller sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the larger sized photosensitive elements.

Claim 40. A method as in claim 16, wherein the step of substantially equalizing the electrical signal of the higher resolution segments with the electrical signal of the lower resolution segments is implemented by increasing the illumination level which generates the signals from the larger sized photosensitive elements to yield a signal substantially equivalent to the signal produced by the smaller sized photosensitive elements.

Claim 41. A multiple resolution sensing apparatus, comprising:

at least one first photosensor segment having a plurality of first photosensitive elements for scanning at a first resolution;

at least one second photosensor segment having a plurality of rows, each one of the plurality of rows having a plurality of second photosensitive elements for scanning at a second resolution, the at least one second photosensor segment adjacent to the at least one first photosensor segment; and

wherein the plurality of second photosensitive elements has a higher density than the plurality of first photosensitive elements so that an image is scanned at a higher resolution with the plurality of second photosensitive elements than with the plurality of first photosensitive elements.

Claim 42. An apparatus as in claim 41, wherein each of the plurality of first photosensitive elements are substantially a first size and wherein each of the plurality of second photosensitive elements are substantially a second size, the first size being larger than the second size.

Claim 43. An apparatus as in claim 41, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment and then scanned across the at least one second photosensor segment in succession along a scanning path.

Claim 44. An apparatus as in claim 43, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory and wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory.

Claim 45. An apparatus as in claim 43, further comprising a memory so that a user selects between the at least one first photosensor segment and the at least one second photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 46. An apparatus as in claim 41, wherein an image is concurrently scanned across the at least one first photosensor segment and the at least one second photosensor segment along a scanning path such that a pixel area of the apparatus is increased to provide improved image quality.

Claim 47. An apparatus as in claim 41, further comprising at least one third photosensor segment having a plurality of third photosensitive elements for scanning at a third resolution, the at least one third photosensor segment adjacent to the at least one second photosensor segment, wherein the plurality of third photosensitive elements has a higher density than the plurality of second photosensitive elements so that the image is scanned at the higher resolution with the plurality of third photosensitive elements than with the plurality of second photosensitive elements.

Claim 48. An apparatus as in claim 47, wherein each of the plurality of second photosensitive elements are substantially a second size and wherein each element of the plurality of third photosensitive elements is substantially a third size, the second size being larger than the third size.

Claim 49. An apparatus as in claim 47, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment, and then scanned across the at least one second photosensor segment, and then scanned across the at least one third photosensor segment in succession along a scanning path.

Claim 50. An apparatus as in claim 49, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory, wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory, and wherein data corresponding to the image scanned by the at least one third photosensor segment is stored in a third portion of the memory.

Claim 51. An apparatus as in claim 49, further comprising a memory so that a user selects between one of the first photosensor segment, the second photosensor segment and the third photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 52. An apparatus as in claim 41, further comprising;

a plurality of first photosensor segments aligned linearly, the plurality of first photosensor segments having a first length, the first length equal to width of a first image to be scanned at the first resolution; and

a plurality of second photosensor segments aligned linearly, the plurality of second photosensor segments having a second length, the second length at least equal to width of a second image to be scanned at the second resolution.

Claim 53. An apparatus as in claim 52, wherein the first length and the second length are substantially equivalent.

Claim 54. An apparatus as in claim 52, further comprising a plurality of third photosensor segments aligned linearly and adjacent to the second photosensor segment, the plurality of third photosensor segments having a plurality of third photosensitive elements for scanning at a third resolution, the plurality of third photosensor segments having a third length at least equal to width of a third image to be scanned at the third resolution.

Claim 55. An apparatus as in claim 54, wherein the first length, the second length and the third length are substantially equivalent.

Claim 56. A multiple resolution sensing apparatus, comprising:

at least one first photosensor segment having a plurality of first photosensitive elements for scanning at a first resolution, and the at least one first photosensor segment having a first length;

at least one second photosensor segment having a plurality of second photosensitive elements for scanning at a second resolution, and the at least one second photosensor segment having a second length, the second length less than the first length; and

wherein the plurality of second photosensitive elements has a higher density than the plurality of first photosensitive elements so that an image is scanned at a higher resolution with the plurality of second photosensitive elements than the plurality of first photosensitive elements.

Claim 57. An apparatus as in claim 56, wherein the first length corresponds to width of a first image to be scanned at the first resolution, and the second width corresponds to width of a second image to be scanned at the second resolution.

Claim 58. An apparatus as in claim 56, wherein each of the plurality of first photosensitive elements are substantially a first size and wherein each of the plurality of second photosensitive elements are substantially a second size, the first size being larger than the second size.

Claim 59. An apparatus as in claim 56, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment and then scanned across the at least one second photosensor segment in succession along a scanning path.

Claim 60. An apparatus as in claim 59, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory and wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory.

Claim 61. An apparatus as in claim 59, further comprising a memory so that a user selects between the at least one first photosensor segment and the at least one second photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 62. An apparatus as in claim 56, further comprising at least one third photosensor segment having a plurality of third photosensitive elements for scanning at a third resolution, the at least one third photosensor segment having a third length, the third length less than the second length.

Clam 63. An apparatus as in claim 62, wherein the plurality of third photosensitive elements has a higher density than the plurality of second photosensitive elements so that the image can be scanned at a higher resolution with the plurality of third photosensitive elements than with the plurality of second photosensitive elements.

Claim 64. An apparatus as in claim 62, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment, and then scanned across the at least one second photosensor segment, and then scanned across the at least one third photosensor segment in succession along a scanning path.

Claim 65. An apparatus as in claim 64, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory, wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory, and wherein data corresponding to the image scanned by the at least one third photosensor segment is stored in a third portion of the memory.

Claim 66. An apparatus as in claim 64, further comprising a memory so that a user selects between one of the first photosensor segment, the second photosensor segment and the third photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 67. A multiple resolution sensing apparatus, comprising:

at least one first photosensor segment having a plurality of first photosensitive elements for scanning a scan line at a first resolution, each one of the plurality of first photosensitive elements having a first width along the scan line; and

at least one second photosensor segment having a plurality of second photosensitive elements for scanning the scan line at a second resolution, each one of the plurality of second photosensitive elements having a second width, the second width less than the first width, so that an image is scanned at a higher resolution with the plurality of second photosensitive elements than the plurality of first photosensitive elements.

Claim 68. An apparatus as in claim 67, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment and then scanned across the at least one second photosensor segment in succession along a scanning path.

Claim 69. An apparatus as in claim 68, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory and wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory.

Claim 70. An apparatus as in claim 68, further comprising a memory so that a user selects between the at least one first photosensor segment and the at least one second photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 71. An apparatus as in claim 67, wherein an image is concurrently scanned across the at least one first photosensor segment and the at least one second photosensor segment along a scanning path such that a pixel area of the apparatus is increased to provide improved image quality.

Claim 72. An apparatus as in claim 67, further comprising at least one third photosensor segment having a plurality of third photosensitive elements for scanning at a third resolution, each one of the plurality of third photosensitive elements having a third length and a third width, the third length and the third width being substantially equal, and the third length and the third width is less than the second length and the second width so that the image can be scanned at a higher resolution with the plurality of third photosensitive elements than with the plurality of second photosensitive elements.

Claim 73. An apparatus as in claim 72, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment, and then scanned across the at least one second photosensor segment, and then scanned across the at least one third photosensor segment in succession along a scanning path.

Claim 74. An apparatus as in claim 73, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory, wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory, and wherein data corresponding to the image scanned by the at least one third photosensor segment is stored in a third portion of the memory.

Claim 75. An apparatus as in claim 73, further comprising a memory so that a user selects between one of the first photosensor segment, the second photosensor segment and the third photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 76. A multiple resolution sensing apparatus, comprising:

at least one first photosensor segment having a first length and having a first number of first photosensitive elements for scanning at a first resolution;

at least one second photosensor segment having a second length and having a second number of second photosensitive elements for scanning at a second resolution; and

wherein the second number of second photosensitive elements is greater than the first number of first photosensitive elements so that an image is scanned at a higher resolution with the at least one second photosensor segment than with the at least one first photosensor segment.

Claim 77. An apparatus as in claim 76, wherein the first length and the second length are substantially the same.

Claim 78. An apparatus as in claim 76, wherein the second length is less than the first length.

Claim 79. An apparatus as in claim 76, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment and then scanned across the at least one second photosensor segment in succession along a scanning path.

Claim 80. An apparatus as in claim 79, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory and wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory.

Claim 81. An apparatus as in claim 79, further comprising a memory so that a user selects between the at least one first photosensor segment and the at least one second photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 82. An apparatus as in claim 76, wherein the image is concurrently scanned across the at least one first photosensor segment and the at least one second photosensor segment along a scanning path such that a pixel area of the apparatus is increased to provide improved image quality.

Claim 83. An apparatus as in claim 76, further comprising at least one third photosensor segment having a third length and having a third number of third photosensitive elements for scanning at a third resolution, wherein the third number of third photosensitive elements is greater than the second number of second photosensitive elements so that an image is scanned at a higher resolution with the plurality of third photosensitive elements than with the plurality of second photosensitive elements.

Claim 84. An apparatus as in claim 83, wherein the third length and the second length are substantially the same.

Claim 85. An apparatus as in claim 83, wherein the third length is less than the second length.

Claim 86. An apparatus as in claim 83, further comprising a means for scanning an image so that the image is first scanned across the at least one first photosensor segment, and then scanned across the at least one second photosensor segment, and then scanned across the at least one third photosensor segment in succession along a scanning path.

Claim 87. An apparatus as in claim 86, further comprising a memory so that data corresponding to the image scanned by the at least one first photosensor segment is stored in a first portion of the memory, wherein data corresponding to the image scanned by the at least one second photosensor segment is stored in a second portion of the memory, and wherein data corresponding to the image scanned by the at least one third photosensor segment is stored in a third portion of the memory.

Claim 88. An apparatus as in claim 86, further comprising a memory so that a user selects between one of the first photosensor segment, the second photosensor segment and the third photosensor segment such that data corresponding to the image scanned by the selected photosensor segment is stored in the memory.

Claim 89. A method, comprising the steps of:

providing a first photosensor segment having a plurality of first photosensitive elements and having a first length;

providing a second photosensor segment adjacent to the first photosensor segment, the second photosensor segment having a plurality of second photosensitive elements arranged in at least two rows and having a second length, the second length less than the first length;

scanning an image across the first photosensor segment at a first resolution; and

scanning the image across the second photosensor segment at a second resolution.

Claim 90. The method of claim 89, further comprising the step of processing data corresponding to the image from the second photosensor segment so that the image is magnified by an amount corresponding to the second resolution.

Claim 91. The method of claim 90, further comprising the steps of:

providing a third photosensor segment, adjacent to the second photosensor segment, the third photosensor segment having a plurality of third photosensitive elements and having a third length, the third length less than the second length; and

scanning the image across the third photosensor segment at a third resolution.

Claim 92. The method of claim 91, further comprising the step of processing data corresponding to the image from the third photosensor segment so that the image is magnified by an amount corresponding to the third resolution.

Claim 93. The method of claim 92, wherein magnification from the third photosensor segment is greater than magnification from the second photosensor segment.

Claim 94. A method, comprising the steps of:

providing a first photosensor segment having a plurality of first photosensitive elements;

providing a second photosensor segment adjacent to the first photosensor segment, the second photosensor segment having a plurality of second photosensitive elements arranged in at least two rows;

concurrently scanning an image across the first photosensor segment and across the second photosensor segment; and

combining data corresponding to the image scanned from the first photosensor segment and data corresponding to the image scanned from the second photosensor segment such that a pixel area is increased to provide improved image quality.

Claim 95. The method of claim 94, further comprising the steps of:

providing a third photosensor segment, adjacent to the second photosensor segment, the third photosensor segment having a plurality of third photosensitive elements;

concurrently scanning the image across the first photosensor segment, the second photosensor segment and the third photosensor segment; and

combining data corresponding to the image scanned from the first photosensor segment, data corresponding to the image scanned from the second photosensor segment and data corresponding to the image scanned from the third photosensor segment such that a pixel area is increased to provide improved image quality.

Claim 96. A method, comprising the steps of:

providing a first photosensor segment having a plurality of first photosensitive elements and having a first length;

providing a second photosensor segment adjacent to the first photosensor segment, the second photosensor segment having a plurality of second photosensitive elements and having a second length, the second length less that the first length;

scanning an image across the first photosensor segment at a first resolution; and

scanning the image across the second photosensor segment at a second resolution.

Claim 97. The method of claim 89, further comprising the step of processing data corresponding to the image from the second photosensor segment so that the image is magnified by an amount corresponding to the second resolution.

Claim 98. The method of claim 97, further comprising the steps of:

providing a third photosensor segment, adjacent to the second photosensor segment, the third photosensor segment having a plurality of third photosensitive elements and having a third length, the third length less than the second length; and

scanning the image across the third photosensor segment at a third resolution.

Claim 99. The method of claim 98, further comprising the step of processing data corresponding to the image from the third photosensor segment so that the image is magnified by an amount corresponding to the third resolution.

Claim 100. The method of claim 99, wherein magnification from the third photosensor segment is greater than magnification from the second photosensor segment.

Claim 101. A method, comprising the steps of:

providing a first photosensor segment having a plurality of first photosensitive elements and having a first pixel density;

providing a second photosensor segment adjacent to the first photosensor segment, the second photosensor segment having a plurality of second photosensitive elements arranged in at least two rows and having a second pixel density, the second pixel density greater than the first pixel density;

scanning an image across the first photosensor segment at a first resolution; and

scanning the image across the second photosensor segment at a second resolution.

Claim 102. The method of claim 101, further comprising the step of processing data corresponding to the image from the second photosensor segment so that the image is magnified by an amount corresponding to the second resolution.

Claim 103. The method of claim 102, further comprising the steps of:

providing a third photosensor segment, adjacent to the second photosensor segment, the third photosensor segment having a plurality of third photosensitive elements having a third pixel density, the third pixel density greater than the second pixel density; and

scanning the image across the third photosensor segment at a third resolution.

Claim 104. The method of claim 103, further comprising the step of processing data corresponding to the image from the third photosensor segment so that the image is magnified by an amount corresponding to the third resolution.

Claim 105. The method of claim 104, wherein magnification from the third photosensor segment is greater than magnification from the second photosensor segment.

Claim 106. A method, comprising the steps of:

providing a first photosensor segment having a plurality of first photosensitive elements;

providing a second photosensor segment adjacent to the first photosensor segment, the second photosensor segment having a plurality of second photosensitive elements arranged in at least two rows;

concurrently scanning an image across the first photosensor segment and across the second photosensor segment; and

combining data corresponding to the image scanned from the first photosensor segment and data corresponding to the image scanned from the second photosensor segment such that a pixel area is increased to provide improved image quality.

Claim 107. The method of claim 106, further comprising the steps of:

providing a third photosensor segment, adjacent to the second photosensor segment, the third photosensor segment having a plurality of third photosensitive elements;

concurrently scanning the image across the first photosensor segment, the second photosensor segment and the third photosensor segment; and

combining data corresponding to the image scanned from the first photosensor segment, data corresponding to the image scanned from the second photosensor segment and data corresponding to the image scanned from the third photosensor segment such that a total pixel area is increased to provide improved image quality.

Claim 108. A method, comprising the steps of:

providing a first photosensor segment having a first number of first photosensitive elements;

providing a second photosensor segment adjacent to the first photosensor segment, the second photosensor segment having a second number of second photosensitive elements, the second number of second photosensitive elements greater than the first number of first photosensitive elements;

scanning an image across the first photosensor segment at a first resolution; and

scanning the image across the second photosensor segment at a second resolution.

Claim 109. The method of claim 108, further comprising the step of processing data corresponding to the image from the second photosensor segment so that the image is magnified by an amount corresponding to the second resolution.

Claim 110. The method of claim 109, further comprising the steps of:

providing a third photosensor segment, adjacent to the second photosensor segment, the third photosensor segment having a third number of second photosensitive elements, the third number of third photosensitive elements greater than the second number of second photosensitive elements; and

scanning the image across the third photosensor segment at a third resolution.

Claim 111. The method of claim 110, further comprising the step of processing data corresponding to the image from the third photosensor segment so that the image is magnified by an amount corresponding to the third resolution.

Claim 112. The method of claim 111, wherein magnification from the third photosensor segment is greater than magnification from the second photosensor segment.

Claim 113. A method, comprising the steps of:

providing a first photosensor segment having a plurality of first photosensitive elements and having a first pixel area;

providing a second photosensor segment adjacent to the first photosensor segment, the second photosensor segment having a plurality of second photosensitive elements arranged in at least two rows and having a second pixel area;

concurrently scanning an image across the first photosensor segment and across the second photosensor segment; and

combining data corresponding to the image scanned from the first photosensor segment and data corresponding to the image scanned from the second photosensor segment such that a total pixel area is increased to provide improved image quality.

Claim 114. The method of claim 113, further comprising the steps of:

providing a third photosensor segment, adjacent to the second photosensor segment, the third photosensor segment having a plurality of third photosensitive elements;

concurrently scanning the image across the first photosensor segment, the second photosensor segment and the third photosensor segment; and

combining data corresponding to the image scanned from the first photosensor segment, data corresponding to the image scanned from the second photosensor segment and data corresponding to the image scanned from the third photosensor segment such that a total pixel area is increased to provide improved image quality.